controller **113** will re-enable the switch circuit **112** to enable the battery device. When the terminal voltage difference value is lower than or equal to the first threshold, the method returns to step S**240**.

[0039] If the controller **113** does not detect the reverse current, step S**250** will be performed. In step S**250**, the controller **113** will detect whether an over current is generated. When the controller **113** detects the over current, step S**260** is performed. In step S**260**, the controller **113** will limit the current value of the battery device to the default value. When the controller **113** does not detect the over current, the method returns to step S**220**.

[0040] FIG. **2**B is a flowchart **200**B of a battery management method according to another embodiment of the disclosure. The battery management method is applied to each of the battery devices **110**-**1**~**110**-N. As shown in FIG. **2**B, in another embodiment of the disclosure, the order of step S**220** and step S**250** can be changed. That is to say, the processes related to step S**250** can be performed first, and then the processes related to step S**220** are performed. Details of the processes can be found in the flowchart **200**B of FIG. **2**B. Because the processes of FIG. **2**B are similar to FIG. **2**A, the details of FIG. **2**B will not be discussed herein.

[0041] FIG. **3**A is a flowchart **300**A of a battery management method according to an embodiment of the disclosure. The battery management method is applied to each of the battery devices **110**-**1**~**110**-N. As shown in FIG. **3**A, in step S**310**, the battery device is enabled. In step S**320**, the controller **113** detects whether a reverse current is generated. If the controller **113** detects a reverse current, step S**330** will be performed. In step S**330**, the controller **113** disables the switch circuit **112**. Then, in step S**340**, the controller **113** will enable a judgment mechanism to detect whether the delay time is longer than or equal to a second threshold. When the delay time is longer than or equal to the second threshold, the method returns to step S**310**, i.e. the controller **113** will re-enable the switch circuit **112** to enable the battery device. When the delay time is lower than the second threshold, the method returns to step S**340**.

[0042] If the controller **113** does not detect the reverse current, step S**350** will be performed. In step S**350**, the controller **113** will detect whether an over current is generated. When the controller **113** detects an over current, step S**360** is performed. In step S**360**, the controller **113** will limit the current value of the battery device to the default value. When the controller **113** does not detect an over current, the method returns to step S**320**.

[0043] FIG. **3**B is a flowchart **300**B of a battery management method according to another embodiment of the disclosure. The battery management method is applied to each of the battery devices **110**-**1**~**110**-N. As shown in FIG. **3**B, in another embodiment of the disclosure, the order of step S**320** and step S**350** can be changed. That is to say, the processes related to step S**350** can be performed first, and then the processes related to step S**320** are performed. Details of the processes can be found in the flowchart **300**B of FIG. **3**B. Because the processes of FIG. **3**B are similar to FIG. **3**A, the details of FIG. **3**B will not be discussed herein.

[0044] FIG. **4**A is a flowchart **400**A of a battery management method according to an embodiment of the disclosure. The battery management method is applied to each of the battery devices **110**-**1**~**110**-N. As shown in FIG. **4**A, in step S**410**, the battery device is enabled. In step S**420**, the controller **113** detects whether a reverse current is generated. If the controller **113** detects a reverse current, step S**430** will be performed. In step S**430**, the controller **113** disables the switch circuit **112**. Then, in step S**440**, the controller **113** will enable a judgment mechanism to detect whether the terminal voltage difference value is greater than a first threshold. When the terminal voltage difference value is greater than the first threshold, the method returns to step S**410**, i.e. the controller **113** will re-enable the switch circuit **112** to enable the battery device. When the terminal voltage difference value is lower than or equal to the first threshold, step **450** will be performed. In step S**450**, the controller **113** further detects whether the delay time is longer than or equal to a second threshold. When the delay time is longer than or equal to the second threshold, the method returns to step S**410**, i.e. the controller **113** will re-enable the switch circuit **112** to enable the battery device. When the delay time is lower than the second threshold, the method returns to step S**440**.

[0045] If the controller **113** does not detect a reverse current, step S**460** will be performed. In step S**460**, the controller **113** will detect whether an over current is generated. When the controller **113** detects an over current, step S**470** is performed. In step S**470**, the controller **113** will limit the current value of the battery device to the default value. When the controller **113** does not detect an over current, the method returns to step S**420**.

[0046] FIG. **4**B is a flowchart **400**B of a battery management method according to another embodiment of the disclosure. The battery management method is applied to each of the battery devices **110**-**1**~**110**-N. As shown in FIG. **4**B, in another embodiment of the disclosure, the order of step S**420** and step S**460** can be changed. That is to say, the processes related to step S**460** can be performed first, and then the processes related to step S**420** are performed. Details of the processes can be found in the flowchart **300**B of FIG. **3**B. Because the processes of FIG. **4**B are similar to FIG. **4**A, the details of FIG. **4**B will not be discussed herein.

[0047] In an embodiment of the disclosure, in the management method of the above embodiments, when the battery management system **100** is in a discharged state, the terminal voltage difference value is regarded as the voltage difference value between the battery units **111** and the load **120**, or it is regarded as the voltage difference value between the first voltage value and the second voltage value, wherein the first voltage value and the second voltage value are the voltage values of the load **120** at different time points.

[0048] In another embodiment of the disclosure, in the management method of the above embodiments, when the battery management system **100** is in a charged state, the terminal voltage difference value is regarded as the voltage difference value between the battery units **111** and the charging device **130**, or it is regarded as the voltage difference value between the first voltage value and the second voltage value, wherein the first voltage value and the second voltage value are the voltage values of the charging device **130** at different time points.

[0049] In an embodiment of the disclosure, the management method further comprises, when the temperature of the battery device has been higher than a third threshold, a protection device will disable the switch circuit **112**. In another embodiment of the disclosure, the management method further comprises, when the voltage of the battery device has been higher than a fourth threshold, a protection device will disable the switch circuit **112**. In another